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U.S. Environmental Protection Agency
Science Advisory Board (SAB) and
Board of Scientific Counselors (BOSC)

Joint Subcommittee to Review the STAR Program

Summary Minutes of Public Meeting
January 12-13, 2000

Committee: The Science to Achieve Results (STAR) Review Subcommittee, a joint subcommittee of the U.S. Environmental Protection Agency's Science Advisory Board (SAB) and the Board of Scientific Counselors (BOSC) of the Office of Research and Development (ORD). (See Roster - Attachment A.)

Date and Time: Wednesday, January 12, 2000 8:30 am to 4:30 pm and Thursday, January 13, 2000 8:30 to 12:00 n Eastern Time. (See Federal Register Notice - Attachment B.)

Location: Conference Room 4530 Ariel Rios Building North, US EPA, 1200 Pennsylvania Avenue, NW, Washington, DC 24060

Purpose: To conduct a joint SAB/BOSC review of the Science To Achieve Results (STAR) Program. (See Meeting Agenda - Attachment C.)

Attendees: Subcommittee members Dr. Marilyn Brown (Co-Chair and BOSC member), Dr. Randall Seeker (Co-Chair and SAB member), Dr. Ann Bostrom (BOSC), Dr. Stephen Brown (SAB), Dr. William Cooper (BOSC), and Dr. Ishwar Murarka (SAB). Dr. Costel Denson, Chair of the BOSC, attended as an observer. Agency and other attendees are listed in Attachment D. The Designated Federal Officers for the Subcommittee were Ms. Stephanie Sanzone and Ms. Shirley Hamilton.

Meeting Summary: The meeting followed the issues and general timing noted in the meeting agenda (See Meeting Agenda - Attachment C).

I. Welcome and Purpose of Meeting - At 8:35 am, **Drs. Marilyn Brown and Randy Seeker**, Co-Chairs of the joint SAB/BOSC STAR Review Subcommittee, opened the meeting. Dr. Brown summarized the purpose of the BOSC as an advisor to the EPA Assistant Administrator for Research and Development. Dr. Seeker summarized the purpose of the SAB, and noted that the joint Subcommittee report would go to the Executive Committees of both organizations. **Ms. Stephanie Sanzone**, the Designated Federal Officer (DFO), led the members through a public disclosure discussion and discussed other administrative matters. No members of the panel currently were recipients of STAR grants.

The co-chairs then reviewed the Charge to the Subcommittee (Attachment E). Dr. Seeker noted that the customers for this review include Congressional, as well as Agency, staff. The proposed time line for report generation reflects the needs of those customers. Dr. Brown clarified that the BOSC does not release consensus drafts until the full BOSC has reviewed them, but Dr. Denson, Chair of the BOSC, noted that this would not slow release of the Subcommittee's report. Dr. M. Brown also noted that the Subcommittee would provide feedback on the sufficiency of the NCERQA website as it relates to the charge, but would not critique all aspects of the web site.

II. Overview of STAR Program & Discussion of Charge Questions - **Dr. Peter Preuss**, Director of the National Center for Environmental Research (previously called the National Center for Environmental Research and Quality Assurance--NCERQA), noted that this review is to be the first of several reviews to evaluate the STAR Program and that it builds on a previous BOSC review of the program. The STAR Program was initiated by former AA for Research and Development, Dr. Huggett, to develop an extramural research effort to complement the Agency's intramural research program. He described the way in which Agency policy and research priorities are served by the program, and efforts to ensure that STAR program research results get back to the appropriate Agency program offices.

The STAR Program has been in operation since 1995 and has awarded over 500 grants and 300 fellowships. STAR supports three types of grants: exploratory grants; targeted requests for applications; and joint solicitations with other agencies. The exploratory grants portion, which includes very broad solicitations, has been getting smaller. The main focus currently is on targeted Requests for Applications (RFAs) and on joint solicitations with other federal agencies. Dr. Preuss noted that the joint solicitations have been very successful, and that agencies are now coming to EPA to ask for joint solicitations. STAR peer review for selection of grants is similar to NSF process, all done using convened panels rather than mail reviews because of the value placed on give-and-take among the reviewers. NCER has only 18 project officers, so there is a significant work-load issue (as pointed out in the previous BOSC review of STAR).

Communication is an important issue and EPA has taken several steps to communicate broadly and well by establishing a web page, preparing annual reports, conducting annual workshops, etc. Web-based outreach is the priority means of communicating, but some paper copies of the STAR Progress Reports are also produced. Training workshops have been held at large and small universities to provide information on how to apply for STAR grants, what makes a good application, etc. EPA has also worked with the National Association of State Universities and Land Grant Colleges (NASULGC) on outreach to minority institutions.

Dr. Preuss noted that the program is likely at "steady state" in terms of size and numbers of grants, but is tending to fund more competitive centers (larger grants, and 5-year rather than 3-year grants). Each center is required to establish an outside science advisory committee. NCER also meets annually with the centers to review progress under the grants. He noted that Congressionally

designated research centers are still required to submit proposals and undergo peer review before center grants are awarded. Centers are also established when the Agency has determined that the research problem requires a critical mass of researchers and a multi-disciplinary approach. In other cases, consortia are formed to accomplish the multi-disciplinary work.

Dr. Preuss reviewed "lessons learned" over the past few years, including the need to bring relevant STAR grants to the attention of program office staff using electronic search and transmission approaches. He noted that NCER has done research summaries by media, and also plan to do searches by Region, etc. In NCER's opinion, web site availability of all STAR grant information was not sufficient for technology transfer. In addition to STAR Reports, which are written in "lay" language, NCER also will be preparing "state of the science" reports as grants come to conclusion. For example, the researchers who participated in the Waters and Watersheds topic will host a workshop, and social scientists who participated have offered to prepare a handbook on working with communities on watershed issues.

Dr. Preuss described another important "lesson learned" as being the need to coordinate with intramural researchers; many intramural researchers felt that STAR was taking funds away from EPA laboratories so it has been important to bring EPA researchers into the program. NCER also has recognized the need to match STAR application and award time lines (e.g., for fellowships) with academic time lines, and has learned lessons about how to write good RFAs. In his view, successes of the STAR program have included the creation of interdisciplinary research communities, strong peer review processes, and comprehensive programs (e.g., a set of grants that deal with fate and transport of Hg that will provide a thorough research effort for EPA on that topic). He also described areas that he recognizes need improvement: communication, processes, and workload (see copy of overhead slides from Dr. Preuss - Attachment F).

The Subcommittee took a break from 10:30 am to 10:45 am.

III. Discussion of the STAR Self Study Document

After the break, Subcommittee members engaged NCER managers and staff in discussion of the Self Study Document that was prepared by NCER in response to the Charge Questions. Issues discussed included:

A. Selection of Topics and RFA Development

1) The degree to which maintenance of in-house expertise is a criterion for deciding which research will be done extra- vs. intramurally: e.g., the development of assessment tools extramurally, but application of assessment (e.g., for risk assessments) to be done intramurally. Dr. Preuss noted that the transition for EPA researchers from being project managers to being primary investigators is continuing.

2) The extent to which hiring priorities are affected by the RFA process: EPA laboratories are represented on the STAR coordination teams, so the availability of in-house expertise is brought to bear. Dr. Preuss indicated that decisions about what should be done intramurally vs. extramurally are made first, and hiring priorities flow from those decisions. However, hiring is in line with strategic research areas that ORD has identified. ORD created a post-doctoral program as a means of bringing in needed expertise as priorities change.

3) Involvement of external scientists in development of RFAs: input comes in development and peer review of ORD research strategies and plans, rather than at the RFA development step.

4) Relating STAR Research to Agency Goals: ORD is considering a project to develop a multi-year planning matrix that would lay out annual program goals by research topic area, indicate the work underway to meet the goals (via STAR or other means), and assist the Agency in determining whether all needs are covered to meet the Agency's strategic goals. The outcome goals are the ones designated by the GPRA requirements. Six pilots are underway that take different approaches to this planning matrix (i.e., strategic roadmapping), however the pilots are not yet available. Dr. Dorothy Patton, Director of ORD's Office of Science Policy, is working on an inventory of all research in the Agency, to get at the non-ORD science.

5) Dealing with multimedia research: there is a specific multimedia Research Coordination Team (RCT), and a large percent of STAR funds are under that RCT. Many program offices are developing their own multi-media assessment approaches, so there may be a role for STAR multimedia research in developing consistent approaches.

6) Partnerships with other agencies, including international organizations: Some partners have high "transaction costs"–this is one reason why international collaboration and collaboration with private organizations is not common, although it worked well with the arsenic research program. The Chemical Manufacturers Association (CMA) has expressed an interest in collaborating as they start their large research program and some topic areas may be suitable for such a venture.

7) Distribution of STAR awards: The Subcommittee requested information on the distribution of grants among the recipient institutions. On the morning of the second day of the meeting, Dr. Preuss provided information on grants by year, grants by university, and fellowships. (See STAR Summary Statistics - Attachment G.)

B. Announcements

8) COS web site: EPA is a member of Community of Science (COS), so that web site is a means of getting the word out about research opportunities and of identifying potential peer

reviewers.

C. Peer Review

9) Funding Rate for Grant Applications: 10% success rate, yet there is a cost associated with grant-writing that is not accounted for in the grant itself. Dr. Preuss agreed that the funding rate for STAR is less than NSF (which is about 20%), but noted that a pre-proposal step would add considerably to the Agency workload. Doing clearly targeted RFAs also helps to "prescreen" the proposals. Agency staff clarified that the 10% success rate is the average, and that actual success rate varies by category.

10) Selection of Peer Reviewers: EPA/STAR assigns reviewers in part on the basis of expertise. Ad hoc reviewers may include European reviewers but this is not often done. It might be useful to add a third category for those proposals that are not meeting the quality criteria. Reviewers not excluded because they are from private sector or non-governmental sector etc. Dr. Preuss noted that diversity (including ethnic and gender diversity) is not the highest priority, but is a consideration, in selecting the peer reviewers. Diversity is not a consideration in selecting projects to fund. One member noted that different reviewers often apply the ratings differently, so EPA may want to normalize each reviewer's ratings and then discuss these during the review meeting.

11) Feedback to Applicants: Whether or not applicants should automatically receive the individual reviewer comments, as well as the summary review, as a means of improving future submissions.

D. Relevancy Review

12) The relationship between relevancy and intellectual merit reviews and whether they should be done independently: there seems to be more concern among applicants about the relevancy review than about the merit reviews. The relevancy reviews might be improved by having reviewers read the full proposals, rather than relying primarily on abstracts, although this sometimes raises issues of intellectual property. Relevancy review currently is not transparent or fully documented. The RFAs describe some considerations (e.g., program portfolio) for relevancy, but don't list specific criteria that will be used. Dr. Preuss emphasized that he and Dr. Jack Puzak, Deputy Director of NCER, see all of the relevancy reviews, including who said what, so that they can add back projects if they feel that relevancy reviewers have missed important considerations.

The Subcommittee recessed for lunch at 12:15pm and reconvened at 1:00pm.

IV. Public Comments: **Dr. Christopher Schonwalder** of the National Institutes for

Environmental Health Sciences was present as an observer, but did not offer formal comments to the Subcommittee.

V. GAO Evaluation of the STAR Program

Dr. Seeker then asked **Ms. Karla Springer** of the U.S. Government Accounting Office's Resources, Community, and Economic Development Division to inform the members about the status of GAO's study on the STAR Program and for her thoughts about how RSAC/BOSC and GAO might work together. Ms. Springer said that GAO is looking at the STAR Program for the House Appropriations Subcommittee on HUD, VA, and Independent Agencies. GAO is looking at four questions: 1) What are the STAR Program's strategies, goals, and priorities? 2) How do STAR's priorities align with ORD goals, program office priorities, and the EPA Strategic Plan? 3) To what extent does STAR meet the research needs of program offices? and 4) What are the results of the STAR Program to date and to what extent has it achieved its goals? The GAO study is being conducted via interviews with program office staff in the Office of Air and Radiation (OAR) and the Office of Solid Waste and Emergency Response (OSWER) about their input into RFAs and other aspects of the STAR program. GAO is also looking at the completed grants to evaluate the results and how they have been used; as of the cut-off for defining the study set, GAO had identified 50 completed grants, 25 of which were exploratory research (which will not be looked at). The Subcommittee noted that a grant is not "completed" until the results are published in the peer-reviewed literature as opposed to the gray literature (i.e., there is a longer test of time needed to evaluate the scientific quality of the results). Several members suggested that mention of STAR research in citation indices is one measure of the extent to which the STAR results, once published, are cited by others. The Subcommittee agreed to describe in their report the extent to which the STAR Program can be evaluated at this point, vs. after several more years. Ms. Springer noted that GAO is using a definition of "completed" that is different from the strict grant definition of closure.

The GAO study time frame calls for a completed report by the summer (July), but Ms. Springer noted that GAO may be asked to report on interim results at Congressional hearings in the spring.

VI. Discussion of Charge Questions (continued):

A. Communicating Results

13. Communicating results within and outside the Agency: The major vehicle is the State of the Science Reports, which are to integrate results of a set of grants in terms that are accessible to the lay managers in the Agency. These reports will be peer reviewed. Given workload on project officers, priorities will need to be set among the various mechanisms for communicating results. For program review workshops, evaluation forms could be used to check whether the workshops are useful to the program offices.

RFAs are one means of giving the researchers some perspective on the amount and types of scientific information that will be needed to make a regulatory decision. It is also helpful to have a designated program office recipient of STAR information (e.g., the Office of Wetlands, Oceans, and Watersheds has created a position specifically to receive information from STAR research).

14. Peer Review of STAR Results: There was discussion of whether or not STAR should peer-review the research results according to the Agency's Peer Review Policy, rather than just relying on the researchers to publish in peer-reviewed journals, or whether the peer-review should be done in the context of the specific policy/regulatory application. Dr. Denson, Chair of BOSC, was concerned about characterizing STAR results as not usable by the Agency unless they have been peer reviewed and he requested further information on the Agency's Peer Review Policy and Handbook.

After agreeing on writing assignments to be completed by the next morning, the Subcommittee recessed at 4:45pm.

On Thursday, January 13, 2000 the Subcommittee reconvened at 8:30 am.

VII. SAB discussion Database - **Dr. Angela Nugent** from the SAB Staff described the SAB Discussion Database which was developed as a tool to help SAB committees pull together drafts quickly. The Co-Chairs requested that information be provided to the Subcommittee members on how to register for the data base, and noted that a decision would be made about how/when to use the database following the meeting.

VIII. Discussion of Charge Questions (continued)

The Co-chairs circulated a draft of the Subcommittee report that reflected writing assignments submitted by members that morning. The Subcommittee resumed its discussion of the charge questions, focusing on Question 4 regarding metrics of success. Issues discussed included:

15. The definition of "customers" for a research program: defining customers as program offices in EPA may be too narrow since the impacts of establishing a sound research program are far beyond EPA (i.e., evaluation is more than relevancy review). In order to capture the impacts of the STAR Program on outside activities and programs, the Agency will need additional metrics (e.g., citation index, other measures of scientific excellence).

16. STAR as it relates to GPRA goals: The Subcommittee requested information on the STAR Program's goals and mission statement. **Dr. Denson** cautioned that the Subcommittee not comment on GPRA goals and measures without becoming better informed.

17. Evaluation Criteria: The Subcommittee defined 2 possible sets of criteria (sound science criteria, and regulatory/mission relevancy criteria) and discussed possible metrics within these two large groupings.

Sound Science examples: frequency of citation in relevant citation indices (measure of use by other scientists), diffusion index to measure movement of knowledge/intellectual transfer out to scientific research institutions (e.g., via training and movement of post-doctoral scientists, training of trainers; U.Del example: for Center for Composite Materials, mapped where PhDs and post docs have gone to work, and grant dollars; number of STAR post docs who stay at EPA).

Relevancy Criteria examples: citation in federal agency documents; use/citation in Congressional testimony.

Dr. Denson requests that the final STAR Review Subcommittee letter be addressed to both the Administrator and Assistant Administrator Noonan, and that the Subcommittee be sensitive to the fact that this joint review sets precedents for future SAB/BOSC reviews. DFO Sanzone was directed to work with DFO Hamilton to ensure that any format and procedural issues that differ between SAB and BOSC be considered and resolved.

At 10:00am, the Subcommittee recessed to look at a few examples of STAR grant packages containing grant application, peer reviewer comments, etc. Members also reviewed the Subcommittee draft responses to the charge questions, and made suggested editorial changes.

The Subcommittee reconvened at 10:45am. After further discussion of possible evaluation criteria for the STAR Program, the Subcommittee discussed the draft responses to Charge Questions 1-3. **Drs. Seeker and Brown** then summarized procedural next steps for completing a Subcommittee report, including development of a Co-Chairs' draft, and subsequent review and comment by all Subcommittee members.

The Co-Chairs adjourned the meeting at 12:00 noon.

I certify that these minutes are accurate to the best of my knowledge.

/s/
Dr. Marilyn Brown, Co-Chair
STAR Review Subcommittee
Board of Scientific Counselors

/s/
Dr. W. Randall Seeker, Co-Chair
STAR Review Subcommittee
Science Advisory Board

/s/
Ms. Stephanie Sanzone
Designated Federal Officer
Science Advisory Board

Attachments:

A - STAR Review Subcommittee Roster
B - Federal Register Notice
C - Meeting Agenda
D - Meeting Sign-in Sheets
E - Charge to the Subcommittee
F - Dr. Peter Preuss' Overheads
G - STAR Summary Statistics